

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository:<https://orca.cardiff.ac.uk/id/eprint/133856/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Brooks, Owain, Mikhail, Ashraf, Brown, Chris, Gumbleton, Mark , Jenkins, Justine and Boyle, Kaitlin 2020. Sodium zirconium cyclosilicate for the treatment of persistent hyperkalaemia in prevalent haemodialysis patients: experience from clinical practice. *Nephrology Dialysis Transplantation* 35 (S3) , P1299. 10.1093/ndt/gfaa142.P1299

Publishers page: <http://dx.doi.org/10.1093/ndt/gfaa142.P1299>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See <http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.



SODIUM ZIRCONIUM CYCLOSILICATE FOR THE TREATMENT OF PERSISTENT HYPERKALAEMIA IN PREVALENT HAEMODIALYSIS PATIENTS: EXPERIENCE FROM CLINICAL PRACTICE

Owain Brooks¹, Ashraf Mikhail¹, Chris Brown¹, Mark Gumbleton², Justine Jenkins², Kaitlin Boyle²

¹Nephrology Department, Morriston Hospital, Swansea Bay University Health Board, Swansea, Wales, UK.

²Cardiff School of Pharmacy and Pharmaceutical Sciences, Cardiff University, Cardiff, Wales, UK.

Background and Aims: Sodium zirconium cyclosilicate (SZC) (Lokelma®) is a new oral potassium binder. In September 2019 the UK National Institute for Health and Care Excellence (NICE) did not recommend SZC for dialysis patients due to a lack of evidence. The recent DIALIZE phase 3b randomised controlled trial concluded that SZC is an effective and well-tolerated treatment for hyperkalemia in haemodialysis (HD) patients. We offer an insight into SZC treatment in HD patients with persistent hyperkalaemia in clinical practice.

Method: Adult prevalent HD patients prescribed SZC for persistent hyperkalaemia were included for analysis. The highest pre-dialysis serum potassium (sK^+) values were recorded each month before (M-6 to M-1) and after (M1 to M5) SZC initiation. The primary efficacy measure was a reduction in sK^+ with SZC treatment.

Results: Sixteen patients (mean age 53.5 years, 56.3% male) were included for analysis. 43.8% (n=7) were diabetic. At the time of SZC initiation 43.8% (n=7) received HD via arteriovenous fistula, 12.4% (n=2) via arteriovenous graft and 43.8% (n=7) via tunnelled central venous catheter. The mean Urea Reduction Ratio [SD] was 68.5% [10.8] and the mean [SD] pre-HD bicarbonate was 22.8mmol/L [2.7]. The dialysate potassium prescription was 2mmol/L for 93.8% of patients (n=15) and 1mmol/L for 6.2% of patients (n=1). The mean [SD] achievement of prescribed dialysis hours over the previous 4 weeks was 93.5% [12.2]. 68.8% (n=11) had previous treatment with calcium polystyrene sulfonate and 12.5% (n=2) with patiromer. 18.8% (n=3) were currently prescribed a renin-angiotensin-aldosterone system inhibitor. 93.8% (n=15) had received dietetic advice. SZC starting doses ranged from 5g four times a week on non-dialysis days to 10g three times a day.

Mean [SD] sK^+ at month-1 (M-1) (immediate pre-treatment period) was 7.38mmol/L [0.31]. Mean [SD] sK^+ at month 1 (M1) was 6.37mmol/L [1.21]. The statistical difference between these groups was $p=0.0023$ (paired two-tailed T-test). Figure 1 includes mean maximum monthly pre-dialysis sK^+ from M-6 to M5.

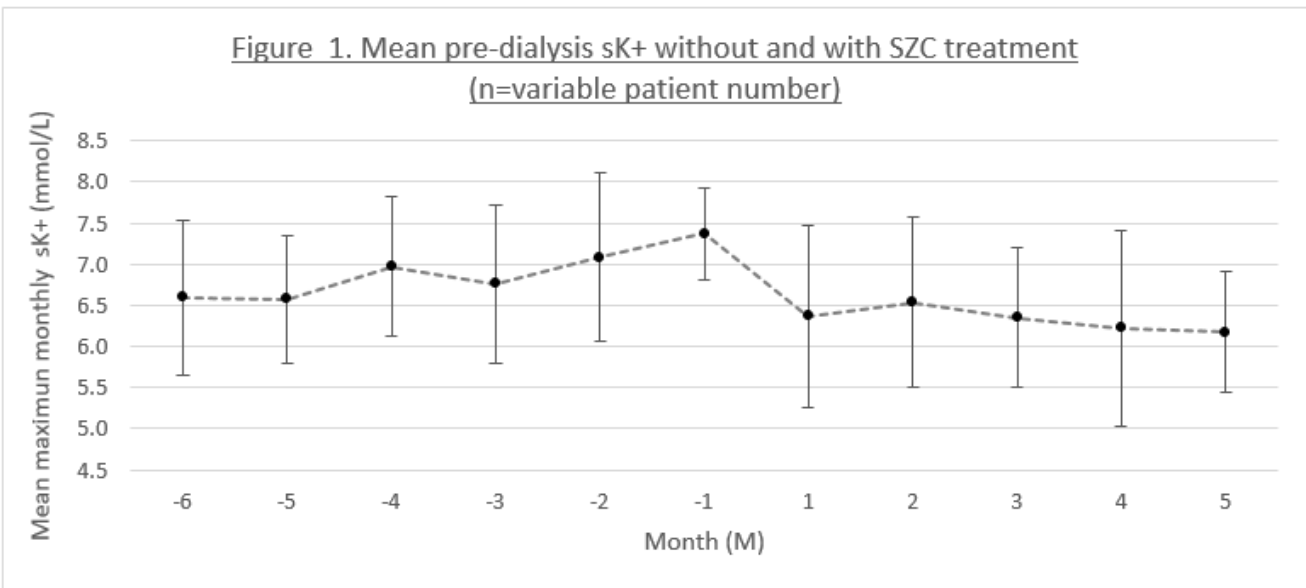
SZC was stopped in two patients (after M1 with sK^+ 5.0mmol/L and after M4 with sK^+ 4.3mmol/L) as it was no longer clinically indicated. Two patients became non-compliant (clinician-suspected or confirmed by patient) with SZC after M2 (sK^+ 6.7mmol/L and sK^+ 6.4mmol/L). Subsequent sK^+ values would not reflect treatment with SZC in these patients. Figure 2 includes mean maximum monthly sK^+ for the 12 patients on SZC from M-3 to M5.

ANOVA and post-hoc Dunnett's tests were undertaken to compare SZC treatment months (M1, 2, 3, 4 and 5) to the immediate pre-treatment period (M-1). ANOVA was close to significance ($p=0.058$), with post-hoc corrected for multiple comparisons finding the data to be significant for M1 vs. M-1 ($p=0.045$) and M5 vs. M-1 ($p=0.018$). The same tests across M1 through M5 revealed no significant difference ($p=0.968$ ANOVA and $p=0.555$ Dunnett's), demonstrating that continued treatment with SZC to M5 did not result in a further decline in sK^+ .

Conclusion: Sodium zirconium cyclosilicate is effective in reducing pre-dialysis sK^+ in patients with moderate and severe hyperkalaemia undergoing haemodialysis in clinical practice.

Figures:

Figure 1. Mean pre-dialysis sK+ without and with SZC treatment (n=variable patient number)



n	14	15	15	16	16	16	16	15	13	13	12
---	----	----	----	----	----	----	----	----	----	----	----

Figure 2. Mean pre-dialysis sK+ without and with SZC treatment (n=12)

